APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/650,287	08/29/2000	Ted Chongpi Lee	Chi-1-1-5-1	9817

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MOSER, PATTERSON & SHERIDAN L.L.P.
595 SHREWSBURY AVE, STE 100
FIRST FLOOR
SHREWSBURY, NJ 07702

EXAMINER
PRIETO, BEATRIZ

ART UNIT	PAPER NUMBER
2142	7

DATE MAILED: 06/24/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 April 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

　 4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,6,7,10,13,14,17 and 19* is/are rejected.

7)☒ Claim(s) *2,8,11,15,18 and 20* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

　 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

　 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

　 a)☐ All b)☐ Some * c)☐ None of:

　　 1.☐ Certified copies of the priority documents have been received.

　　 2.☐ Certified copies of the priority documents have been received in Application No. _____.

　　 3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

　 * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
　 Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
　 Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1.   This communication is in response to request for reconsideration filed 4/28/04, claims 1-20 remain pending.

2.   Remarks presented on the above-mentioned response have been fully considered. Specifically, pages 2-8, indicate that the term "bandwidth utilization" is to be interpreted in light of the specification, i.e. "bandwidth utilization of a link is defined as the *loading or load* of the link" (page 2, lines 7-1 and page 4, lines 24-35).

3.   Claims 2, 8, 11, 15, 18 and 20 are objected to as being dependent upon a rejected based claim, but would be allowable if rewritten in independent form including all the limitations of the base claim and any intervening claims. Claims 3-5 dependent are claim 2, claim 9 is dependent on claim 8, claim 12 is dependent on claim 11 and claim 16, dependent on claim 15, thereby further limiting above-mentioned object claims.

4.   Applicant is reminded that in the future any further telephone conversation with examiner will require proper interview procedure (see MPEP 713), to ensure everything discussed is adequately made of record and comments and/or suggestion made by either parties are not mischaracterized.

Claim Rejection under 35 U.S.C. 102

5.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6.   Claims 1, 7, 10, 14 and 17 are rejected under 35 U.S.C. 102(b) as being anticipated by Bertin U.S. Patent No. 5,600,638 (Bertin hereafter).

Regarding claims 1, 7, 10, 14 and 17, Bertin teaches substantial features of the invention as claimed, teaching a method comprising the steps of;

iteratively determining a path between a source node and destination node in a network comprising a plurality of nodes interconnected by links or paths (col 1/lines 30-54 and col 4/lines 55-67, figures 2, and 4-12, iterative path determination for each node see col 4/lines 55-col 5/line 22);

wherein each link is associated with a load, traffic or congestion level (Fig. 4, and col 10/lines 60-col 11/line 5);

where links having a load level exceeding a pre-assigned threshold load level are rejected as route

(col 6/lines 25-46 and col 11/lines 8-51).

7.   Claims 1, 7, 10, 14 and 17 are rejected under 35 U.S.C. 102(b) as being anticipated by Cain et. al. U.S. Patent No. 4,905,233 (Cain hereafter).

Regarding claims 1, 7, 10, 14 and 17, Cain teach substantial features of the invention as claimed, teaching a method including the steps of:

iteratively (Fig. 4) determining a path between a source node and destination node in a network comprising a plurality of nodes interconnected by communication links or paths (Fig. 3, col 6/lines 39-57);

wherein each link is associated with a characteristic link metric level thereof (col 6/lines 58-col 7/line 20, measure of packets on the link, i.e. "load")

where links having a load level exceeding a pre-assigned threshold metric level reference are accepted as route or a path whose metric exceed that of the reference is eliminated a feasible path (see col 1/lines 67-col 2/line 10, paths having a load utilization level exceeding a threshold level are not used see col 11/lines 21-25).

8.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9.   Claims 1, 6, 7, 10, 13-14, 17 and 19 are rejected under 35 U.S.C. 103(a) as being by obvious over DALEY et. al. (Daley) U.S. Patent No. 6,256,309 in view of Bertin U.S. Patent No. 5,600,638

Regarding claim 1, Daley teaches a system/method related to field of communication system, teaching a system/method comprising the steps of:

iteratively defining a circuit path between a source node and a destination node in a network (Daley: repeatedly defining routes from a source node to a destination node, each defining a route i.e. physical link or virtual path connection between a source and each destination node, see col 1/lines 49-col 2/line 7, defining path from streams of destination nodes, col 5/lines 9-23, defining a circuit path (e.g. SVC) see col 2/lines 44-56), the network comprising

a plurality of nodes (12-16 of Fig. 1) interconnected by links, where each link has associated with it a respective bandwidth availability level (Daley, bandwidth available see col 2/lines 63-67, path routes having range of available bandwidth see col 3/line 45-55) and

where links having bandwidth availability levels exceeding a threshold level are not used to define said circuit path (Daley: do not use route if exceeding see col 8/lines 45-56, pruning, i.e. excluding routes for use see col 4/lines 50-65); however Daley does not specifically use the link load levels;

Bertin teaches iteratively determining a path between a source node and destination node in a network comprising a plurality of nodes interconnected by links or paths (col 1/lines 30-54 and col 4/lines 55-67, figures 2, and 4-12, iterative path determination for each node see col 4/lines 55-col 5/line 22);

wherein each link is associated with a load, traffic or congestion level (Fig. 4, and col 10/lines 60-col 11/line 5);

where links having a load level exceeding a pre-assigned threshold load level are rejected as route (col 6/lines 25-46 and col 11/lines 8-51).

It would have been obvious to one ordinary skilled in the art at the time the invention was made given the suggestion of Daley for finding the shortest or best available virtual or physical circuit path from one point to another based on the traffic metrics values associated with the circuit paths as means for distributing the load across paths based on their metric characteristics, the teachings for eliminating paths that are exceeding a predetermined threshold load level would be readily apparent. Motivation to combine the teachings of Bertin to modularize the determination and elimination step discussed above as an identification and selection/elimination phase reducing the computation time in the iteration.

Regarding claim 6, wherein said iteratively defined circuit path is compared to said ideal circuit path by

comparing the number of links within each respective circuit path (Daley: selection based on the shortest path route and minimum number of hops see col 7/lines 65-col 8/line 11).

Regarding claim 7, prior art further teaches

determining a shortest path between a source node and a destination node (Daley: shortest path determination computation see col 5/lines 16-34), said shortest path comprising a plurality of intervening nodes coupled by respective links (Daley, generate listing of paths, see col 5/lines 16-34, calculated shortest path for a specified constraint see col 6/lines 6-16, constrains include number of hops to destination see column 6/lines 59-66);

determining whether a respective bandwidth utilization level for each link within said circuit path is below a threshold level (Daley: bandwidth thresholds see col 8/lines 27-50, Bertin: col 10/lines 60-col 11/line 5); and

adapting said circuit path to avoid using links having respective bandwidth utilization levels above said threshold level (Daley: pruning routes ("adapting"), i.e. pruning or excluding routes for use see col 4/lines 50-65, dropping links see col 2/lines 60-67, Bertin: col 6/lines 25-46 and col 11/line 8-51).

Regarding claim 10, prior art further teaches:

selecting, according to a shortest path algorithm, at least one link within a circuit path between a starting node and a destination node within a network comprising a plurality of nodes (Daley: path selection SPT based or choosing an SPT from among a plurality, each SPT associated with a route from one node to another node(s) see col 6/lines 1-29, selection of better path see col 8/lines 57-58);

determining whether each selected link has associated with it a bandwidth utilization level exceeding a threshold level (Daley: col 8/lines 26-50, see Fig. 4, step 62, Bertin: col 6/lines 25-46 and col 11/line 8-51);

rejecting each selected link having associated with it a bandwidth utilization level exceeding said threshold level (Daley: col 8/lines 50-58, Bertin: col 6/lines 25-46 and col 11/lines 8-51); and

repeating said steps of selecting and determining until a circuit path between said starting node and said destination node has been determined (Daley: Fig. 4, step 60, a path selection for another see col 8/lines 57-58, repeating for each SPT select and determine steps see col 9/lines 3-14).

Regarding claim 13, selecting, according to said shortest path algorithm, each link within a circuit path between an intervening node (i.e. the last node of a partially formed circuit path) and said destination

node (Daley: shortest path selection including number of hops see col 7/lines 65-col 8/line 8).

Regarding claim 14, this method claim contains limitation substantially the same as limitation discussed on the method claims 1, and 10, same rationale of rejection is applicable, further limitation include, selecting, according to a shortest path algorithm, an available link to a ("next") node within said circuit path (Daley: path selection SPT based or choosing an SPT from among a plurality, each SPT associated with a route from one node to another node(s) see col 6/lines 1-29, selection of better path see col 8/lines 57-58).

Regarding claim 17, this claim comprises the computer readable medium storing a software program that, when executed by a computer, causes the computer to perform the method discussed on claim 1, therefore same rationale of rejection is applicable.

Regarding claim 19, including limitation discussed above, same rationale of rejection is applicable, further prior art teaches:

   a network manager for determining a circuit path between a source node and a destination node within a network comprising a plurality of nodes (Daley: routing agent 18 implements process of Fig. 2 for determining routes and associated available links between a source and destination nodes see col 5/lines 49-col 6/line 4, determining all circuit path e.g. virtual path or physical link between nodes see col 1/lines 49-col 2/lines 7); and

   a data base for storing a respective bandwidth utilization level for each of a plurality of links interconnecting said nodes (Daley: database 22, stores obtained circuit path, i.e. typology information and associated traffic metrics see col 5/lines 38-62, routing table contain bandwidth utilization thresholds or brackets associated with available routes between nodes see col 5/lines 16-27;

   said network manager determining said circuit path by iteratively selecting appropriate next nodes according to a shortest path algorithm (Daley: determining said circuit path by repeatedly selecting appropriate route to a destination node ("next nodes") according to a shortest path algorithm, generate listing of available paths according to the shortest path algorithm see col 5/lines 16-34, calculated shortest path for a specified constraint see col 6/lines 6-16, constrains include number of hops to destination see column 6/lines 59-66 next nodes or intervening nodes);

   determining whether a link communicating with said selected next node has associated with it a bandwidth utilization level exceeding a threshold level (Daley, routing selection determine bandwidth

available meeting requirements see col 2/lines 63-67, path routes selection having range of available bandwidth see col 3/line 45-55, links having bandwidth utilization levels exceeding a threshold level are not used to define said circuit path see col 8/lines 45-56, pruning, i.e. excluding routes for use see col 4/lines 50-65); and

selecting an alternative next node in the case of said link having associated with it a bandwidth utilization level exceeding said threshold level (Daley route selection must satisfy bandwidth requirements including selecting an alternative route that meet requirement col 5/lines 9-25, see route selection associated with bandwidth thresholds levels selection see col 8/lines 27-57 including select another route, alternative path selection see col 9/lines 3-16).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Prieto, B. whose telephone number is (703) 305-0750. The Examiner can normally be reached on Monday-Friday from 6:00 to 3:30 p.m. If attempts to reach the examiner by telephone are unsuccessful, the Examiner's Supervisor, Jack B. Harvey can be reached on (703) 305-9705. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3800/4700.

Any response to this action should be mailed to:
Commissioner of Patents and Trademarks
Washington, D.C. 20231

or faxed to the Central Fax Office:

(703) 872-9306, for Official communications and entry;

Or Telephone:

(703) 306-5631 for TC 2100 Customer Service Office.

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington VA, Fourth Floor (Receptionist), further ensuring that a receipt is provided stamped "TC 2100".

B. Prieto
TC 2100
Patent Examiner